

Compact High-Resolution Broad-Band Terahertz Fabry-Perot Spectrometer, Phase I

Completed Technology Project (2006 - 2006)



Project Introduction

Our objective is to develop a compact scanning Fabry-Perot spectrometer, for satellite far-infrared astronomy and Earth remote sensing, that operates at wavelengths of 100 μ m and longer, with a resolving power of 10,000 and free spectral range of ~ 50 cm⁻¹. The novelty of this innovation lies in obtaining this very large free spectral range simultaneously with a resolution equivalent to the state of the art for laboratory far-infrared spectrophotometers in a volume less than a liter and directly suitable for airborne and satellite instrumentation. The critical innovation lies in providing far-infrared Fabry-Perot mirrors of >99.99% reflectance to enable unprecedented system finesse. This mirror development and proof testing, and a systems analysis of an F-P spectrometer subsystem for satellite and aerial imaging are the subject of Phase I; Phase II includes design, fabrication and testing of the miniature spectrometer.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Jet Propulsion Laboratory (JPL)	Lead Organization	NASA Center	Pasadena, California
Zyberwear, Inc.	Supporting Organization	Industry	Ocoee, Florida



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

California

Florida

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.3 Optical Components